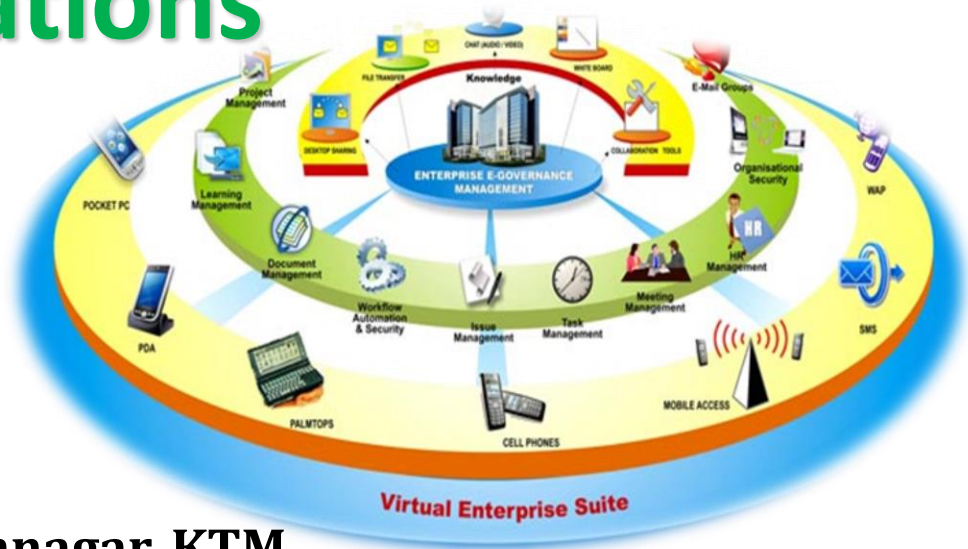




UNIT -V

Management Information System

Business Applications



Venue: Liberty College, Anamnagar, KTM

Date: 22nd November 2016

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Electronic Payment Systems

1. Overview of electronic payment technology

- The online shopping experience
- Limitations of traditional payment instruments

2. Electronic or Digital cash

- Properties of electronic cash
- Digital cash in action

3. Electronic checks

- Benefits of electronic checks
- Electronic checks in action

4. Online credit card based systems

- Types of credit card payments
- Secure electronic transaction

5. Online financial instruments

- Debit cards at point of sale
- Debit cards and electronic benefit transfer
- Smart cards

6. Consumer, legal and business issues



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Electronic Payment System

Traditional Payment Methods

- Cash
- Debit cards
- Traveler's cheque
- Credit cards
- Barter system
- Personal cheque
- Bank drafts etc.

Cash, checks, credit cards, and debit cards account make up more than 90 percent of all consumer payments in the United States

Most popular consumer electronic transfers are automated payments of:

- Auto loans
- Insurance payments
- Mortgage payments made from consumers' checking accounts.



Electronic Payment System



Normal payment models

- Cash
- Cheque
- Cards



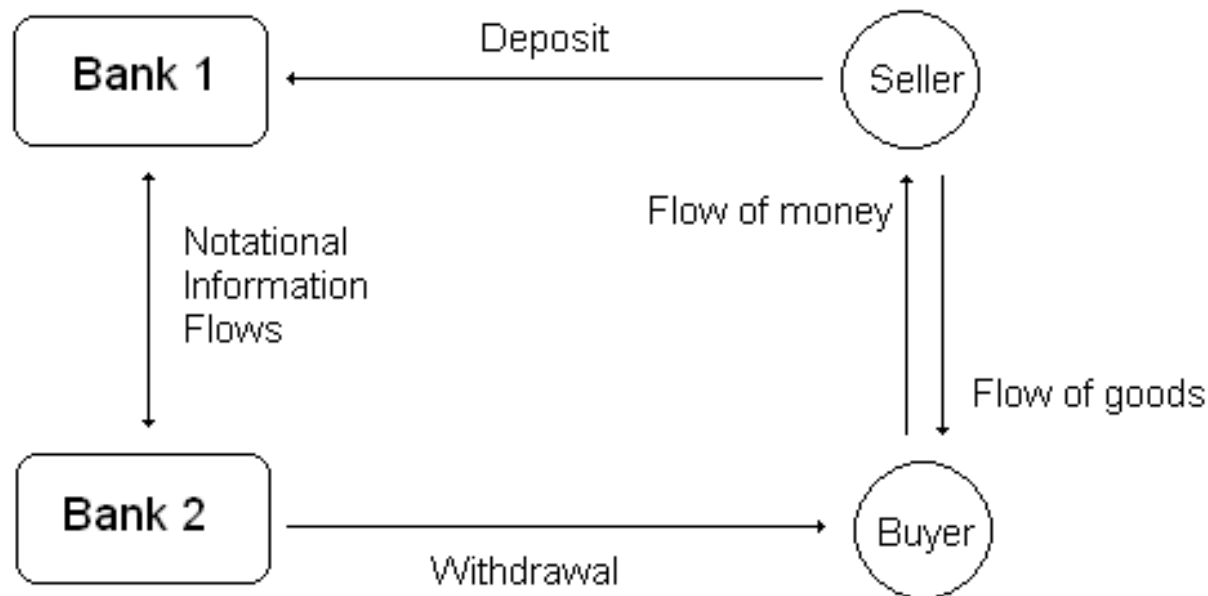


Electronic Payment System



Normal payment protocol models

The diagram shows a simplified schematic of a transaction involving either cash or checks.

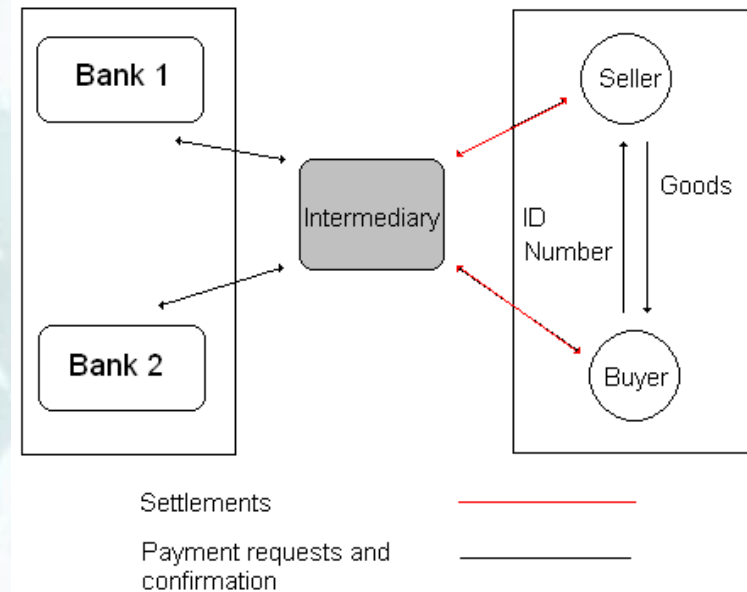




Electronic Payment System



Normal payment protocol models
Intermediate reconciliation
differs from bank-to-bank reconciliation
in that the instrument of payment
(i.e. the credit/debit card or money
order) is issued by an intermediary
(Visa, MasterCard, Western Union)
who guarantees payment, and has
arrangements with the various banks
involved for processing the transaction.





Electronic Payment System



E-Payment Scheme Requirements

The e-payment encompasses three participants which are as follows

User: The user (customer) purchases e-currency from the bank employing actual money by e-payment. The user can then utilize e-currency to carry out e-payment to buy goods.

Merchant: The merchant is the data storage which provides user with both product/services and information.

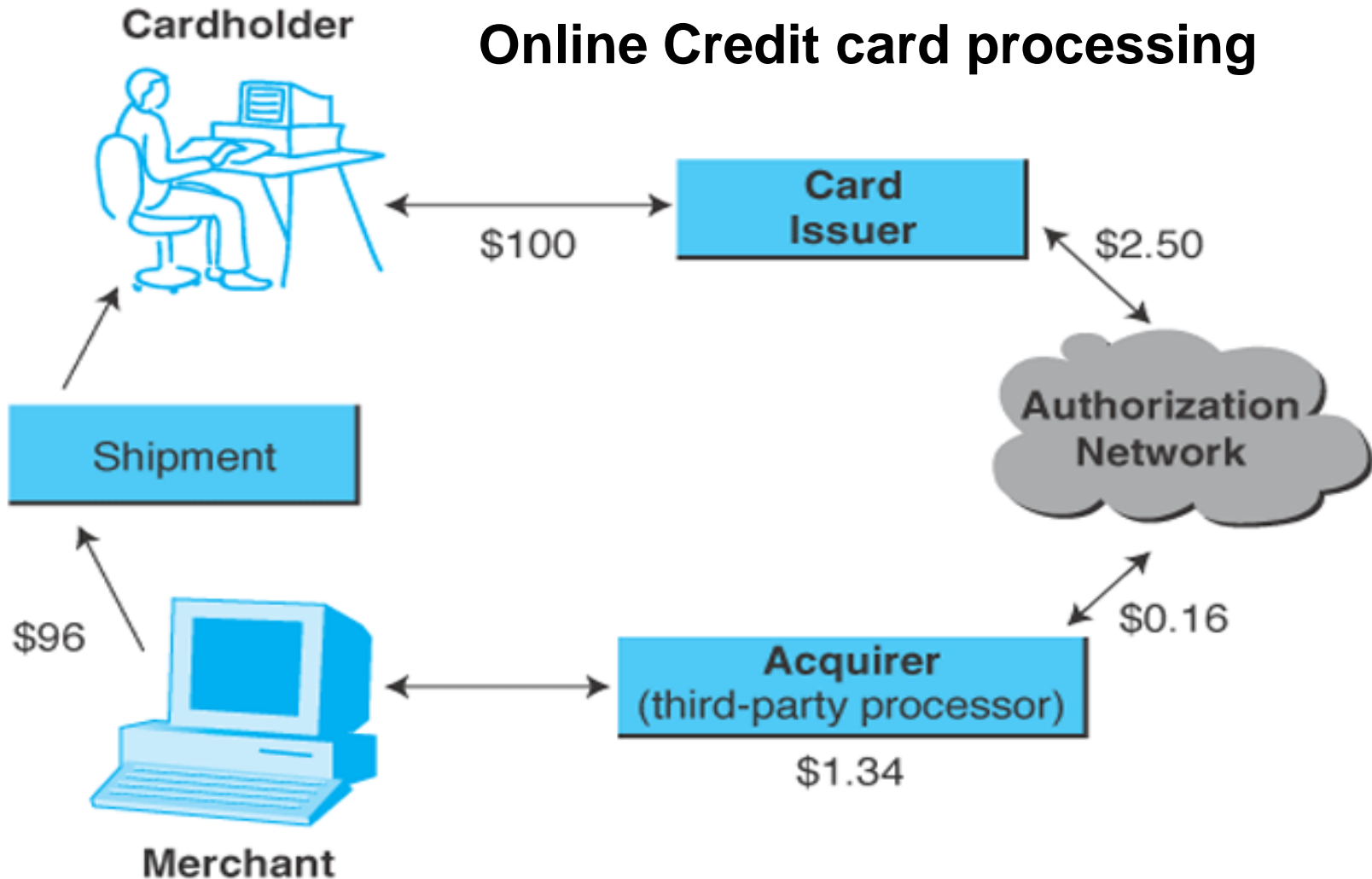
Bank: The bank is the trusted authority. It mediates between user and merchant in order to ease the duties they carry out. In general, the bank acts like a broker offering the e-coins for the e-payments.

Electronic Payment System



Online Credit card processing

Pr





Electronic Payment System



Five Security Tips in e-payment

- Don't reveal your online Passcode to anyone. If you think your online Passcode has been compromised, change it immediately.
- Don't walk away from your computer if you are in the middle of a session.
- Once you have finished conducting your banking on the Internet, always sign off before visiting other Internet sites.



Electronic Payment System

Five Security Tips in e-payment

- If anyone else is likely to use your computer, clear your cache or turn off and re-initiate your browser in order to eliminate copies of Web pages that have been stored in your hard drive.
- It is recommended to that you use a browser with 128-bit encryption to conduct secure.



Payment Cards



The term payment card describes all types of plastic cards used to make purchases

Credit card

Has a spending limit based on a user's credit history

Debit card

Removes an amount from a cardholder's bank account

Transfers it to the seller's bank account

Charge card

Carries no spending limit

Amount charged is due at the end of the billing period



Payment Cards



Advantages:

Widespread acceptance

Usually have built-in security for merchants

Disadvantage:

Payment card service companies charge per-transaction fees and yearly/monthly processing fees



The process of using credit cards offline

A cardholder requests the issuance of a card brand (like Visa and MasterCard) to an issuer bank in which the cardholder may have an account.

A plastic card is physically delivered to the customer's address by mail.

The cardholder shows the card to a merchant to pay a requested amount. Then the merchant asks for approval from the brand company.

The acquirer bank requests the issuer bank to pay for the credit amount.

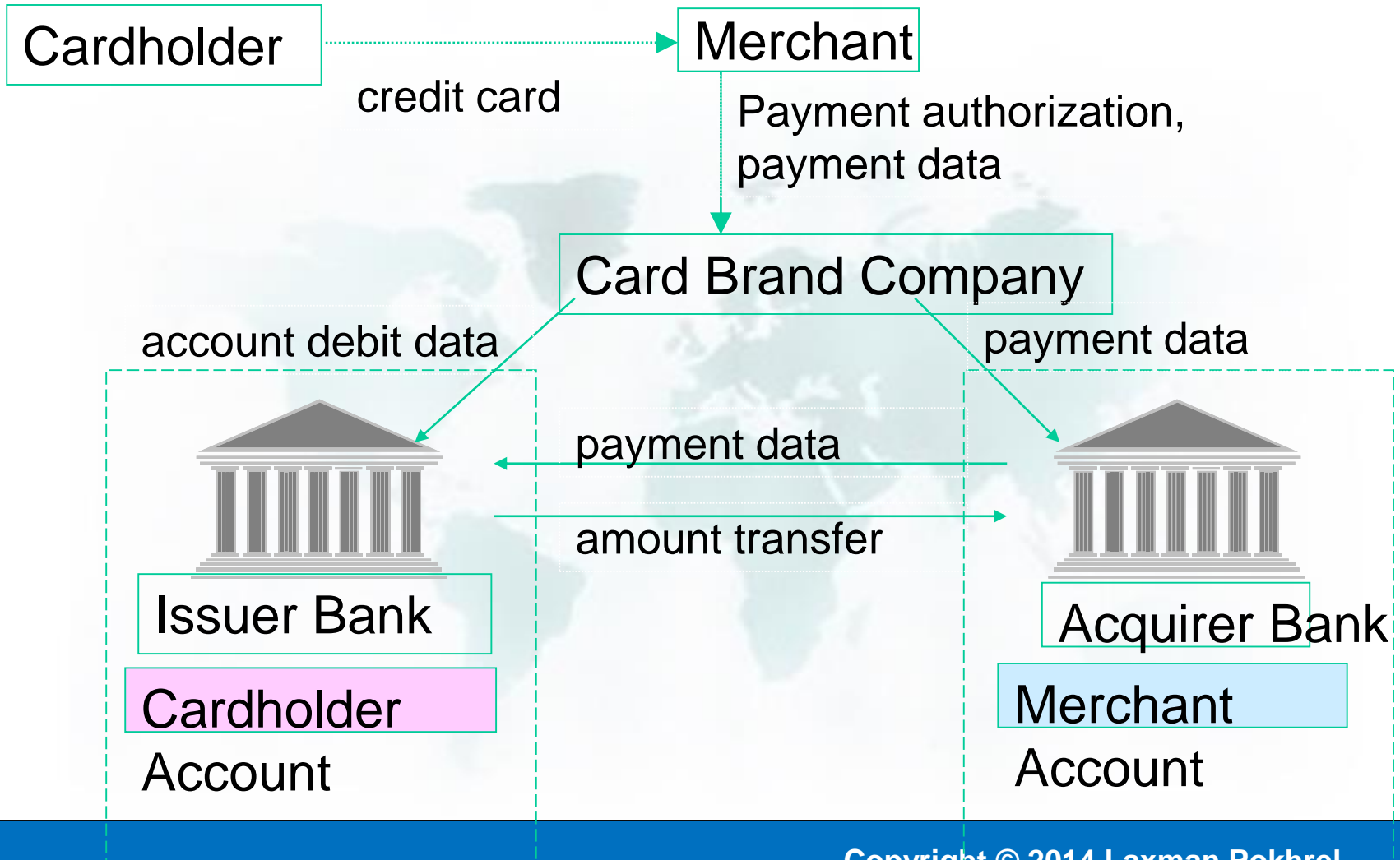
The authorization of card issuance by the issuer bank, or its designated brand company, may require customer's physical visit to an office.

The card can be in effect as the cardholder calls the bank for initiation and signs on the back of the card.

Upon the approval, the merchant requests payment to the merchant's acquirer bank, and pays fee for the service. This process is called a "capturing process"



Credit Card Procedure (offline and online)





Credit Card Procedure (offline and online)

In Summary

- The consumer presents preliminary proof of his/her ability to pay by presenting credit card number to the merchant.
- Then merchant verifies credit card number with the bank and prepares the purchase slip for the consumer to approve.
- Merchant uses the approved slip to collect funds from the bank.
- Finally customer receives a statement from the bank with a record of transaction.



Electronic Payments



Cyber Cash, VeriFone and Virtual Payments (third party): Steps involved

- From the customer, encrypted credit card information with digital signature are sent to the merchant.
- From the merchants encrypted message is sent to third party (Cyber Cash, VeriFone and Virtual Payments) encryption system.
- Third party request for the verification of credit card authenticity and A/c position from the credit card processors.
- Credit card processors ask for verification from customers bank.
- Bank then provides the authorization to credit card processors.



Electronic Payments



Cyber Cash, VeriFone and Virtual Payments (third party): Steps involved contd.....

- Credit card processors give the signal to the third party
 - Ok: Accurate credit card and A/c with sufficient funds
 - No: Inaccurate credit card or A/c with insufficient funds
- Verified information is sent to merchant by third party.
- Merchant finally sends the purchase information to customer with the product after it is verified from the third party.



Electronic Payments



Cyber Cash, VeriFone and Virtual Payments (third party): Steps involved contd.....

- Alternatively, instead of encrypted credit card information with digital signature customer sends the registered PIN to merchant.
- From the merchants registered PIN is sent to third party for verifications.
- Third party interact with the customers through the email for confirmation and sends the purchase information to customer.
- Credit card processors ask for verification from customers bank.
- Finally, with the customer approval verified information is sent to merchant by third party.



Electronic Payment Scheme



SET and JEPI

SET (Secured Electronic Transaction)

SET is not itself a payment system, but rather a set of security protocols and formats that enabled users to employ the existing credit card payment infrastructure on an open network in a secure fashion.

It uses the digital certificates to ensure the identities of parties involved in purchase and also encrypts credit card and purchase information before transmission on the internet.



Electronic Payment Scheme

SET and JEPI

JEPI (Joint electronic payments initiative)

Standard format for payment negotiations.

Used on client and merchant side. On client side it might be simply an interface where as on merchant side it is used to transmit incoming transaction to the proper transport protocol.



Electronic Cheque

Cheque is basically an exchange of specific paper with the important message on it to transfer the amount from an account.

The e-cheque method has been deliberately created to work in much the same way as conventional paper cheque.

An account holder will issue an electronic document that contains the name of the financial institution, the payer's account number, the name of payee and amount of cheque.



Electronic Cheque

Most of the information is in uncoded form.

Like a paper cheque e-cheques also bear the digital equivalent of signature: a computed number that authenticates the cheque from the owner of the account.

Digital chequing payment system seeks to extend the functionality of existing chequing accounts for use as online shopping payment tools. Electronic cheque system has many advantages:



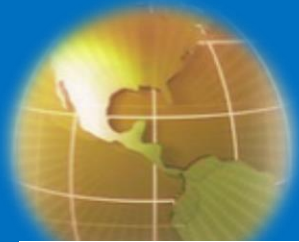
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Unit 5: Business Applications



The process of electronic chequing system can be described using the following steps:

- **Step 1:** Customer fills a purchase order form, attaches a payment advice (electronic cheque) and with all security (encryption, digital signature) mechanism and sends it to the vendor.
- **Step 2:** The vendor decrypts the information using his private key, checks the purchaser's certificates, signature and cheque, attaches his deposit slip, and endorses the deposit attaching his public key certificates. This is encrypted and sent to his bank.

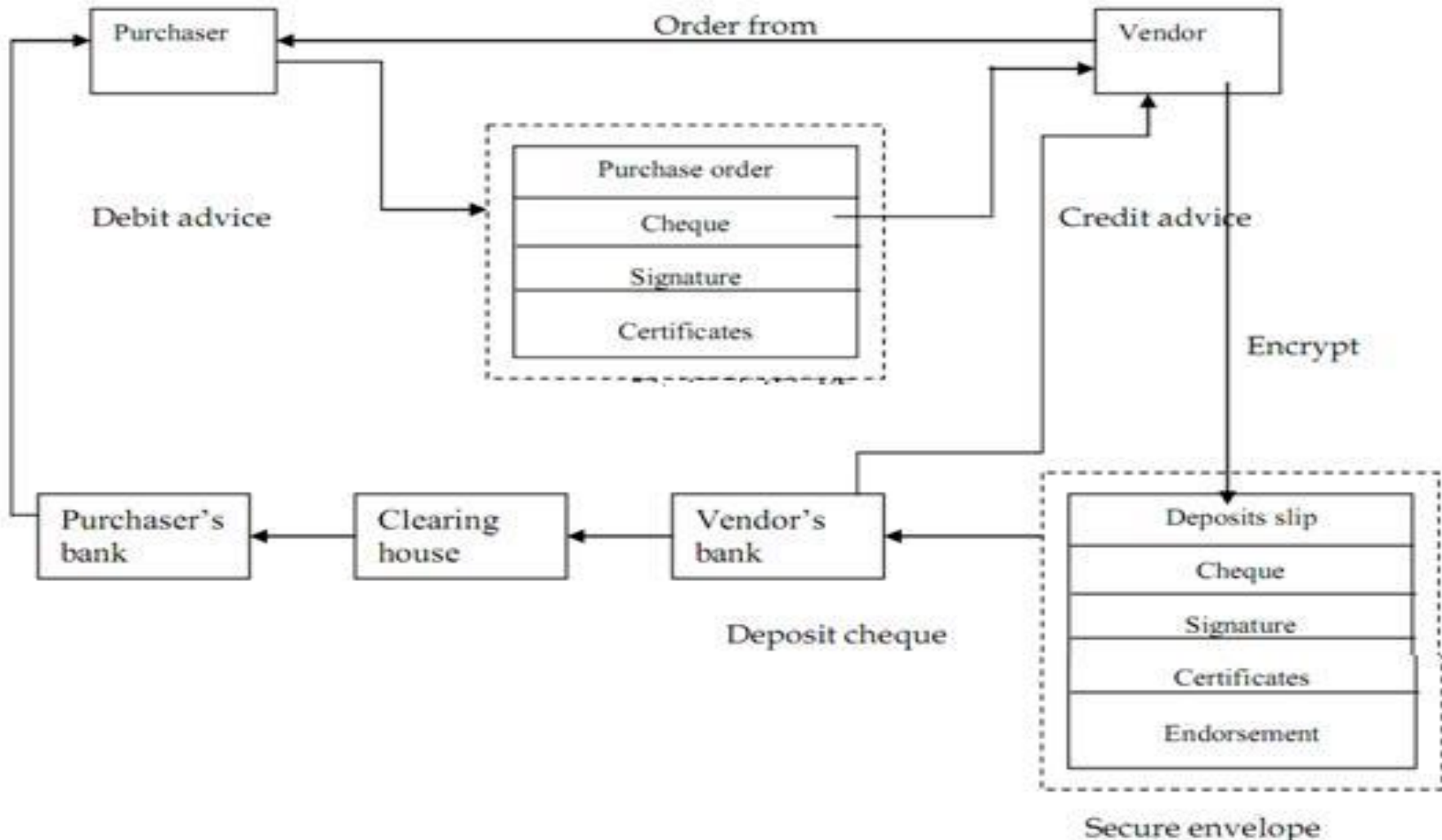


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Clearing Cheque payment electronically





Financial Services Technology Consortium (FSTC) System

It is a consortium of banks and clearing houses that has designed an electronic cheque.

FSTC offers users a choice of payment instruments that allow them to designate an electronic cheque as a certified cheque.

Can be transferred through the direct transmission over the network or by an e-mail.



Digital Cash

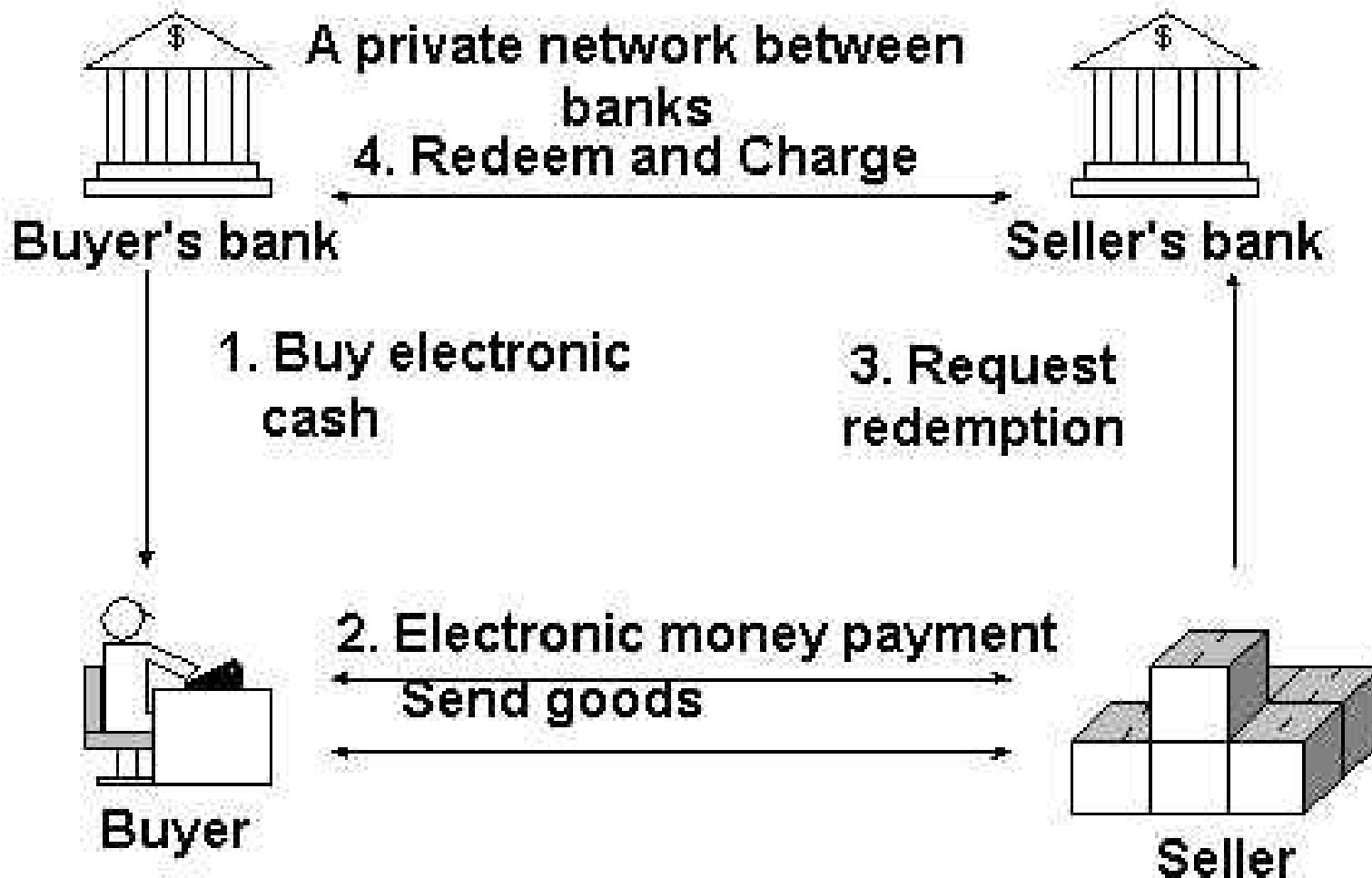
- It is defined as “digital cash is a digitally signed payment message that serves as a medium of exchange”
- It is e-money represented as a binary form of computer data.
- Generally needs to be backed up by a trusted third party.



How does it work?

Consider the following scenario:

- Customer has an account in a bank.
- Customer sends an encrypted mail to the bank requesting for money.
- Bank has to authenticate the message and then debits the customers account.
- It sends the customer the money which is an encrypted file containing a huge





Desired objective from digital cash

- Security.
- Privacy.
- Portability.
- Transferability.
- Divisibility.
- Convenient to use.



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Advantages

- Best suited for small transactions.
- Anonymity can be preserved.
- Low cost for e-transaction.
- Authentication is not as issue.

Disadvantages

- Easy to do illegal transactions if forged/ technology failures
- \$1 million in paper will be heavy!!
- Consumer resistance: Lack of complete trust
- Other issues:
- Power failures, Loss of records, Undependable software



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Questions??